

## Effects of a Microbiotic Lipopolysaccharide on Several Neuro-Biochemical Parameters of Rat Liver and Brain

P. Pappas, P.N. Karamanakos, N. Gousia and M. Marselos

Department of Pharmacology, Medical School, University of Ioannina, Greece

### AIM

The drug metabolizing ability of humans and experimental animals have shown to be reduced by processes that initiate the response to inflammatory stimuli. Experimental infections with bacteria decreased drug metabolizing enzymes like CYP1A1/1A2. In addition, microbiotic endotoxins activates the HPA axis and the brain biogenic amine system, known to control several neuroendocrine functions.

### METHODS

Male Wistar rats were used for treatment with a lipopolysaccharide (LPS, ser.026/B6; 200 µg/kg, p., in saline, once) in a time response scale. The effects of LPS on hepatic drug metabolizing enzymes were examined, as well as on brain monoamine levels.

### RESULTS

LPS significantly decreased all measured enzyme activities, in a time-dependent manner. Cytosolic aldehyde dehydrogenases (ALDH1A3 and ALDH3A1) as well as microsomal ALDH3A2 and EROD activities were decreased at 12 hrs time-point; the mitochondrial ALDH2 was found to be increased 3hrs after LPS administration, and so was the liver/body weight ratio. In addition, the levels of biogenic amines like NA, DA, DOPAC, HVA, 5-HT and 5-HIAA determined in midbrain and striatum correlated very well with the time scale protocol.

### CONCLUSIONS

Our findings define for the first time effects of LPS on the activities of ALDHs. However, it is not clear if this is a direct toxic effect of the pyrogen or an indirect action mediated by other humoral or hormonal mechanisms controlled by central monoamine system.